Pseudomonas oryzihabitans peritonitis in a patient on continuous ambulatory peritoneal dialysis

Pseudomonas oryzihabitans is a non-fermentative, Gram-negative bacterium that has been implicated in human pathology, mainly as an agent of catheter-related bacteremia [1–3]. Recent data suggest that environmental sources may be implicated in the pathogenesis of infection due to this species [4], as well as the presence of catheters and other foreign bodies [3]. We report a case of peritonitis due to *P. oryzihabitans* in a patient undergoing continuous ambulatory peritoneal dialysis (CAPD), and review the cases of peritonitis due to this organism.

CASE SUMMARY

The patient was a 50-year-old woman with mesangial immunoglobulin A (IgA) nephropathy; she had started CAPD in November 1997. Her past history included hypertension, obesity, hypercholesterolaemia and glucose intolerance. She had a peritonitis due to *Pseudomonas aeruginosa* in June 1998, as well as several exit-site infections due to *Escherichia coli* during 1999 and 2000.

In January 2001, she complained of periumbilical pain. Physical examination disclosed periumbilical erythema, warmth and swelling. The peritoneal fluid leucocyte count was 100 cells/μL with 85% mononuclear cells. Oral cefuroxime, 500 mg twice daily was prescribed. Forty-eight hours later the patient complained of abdominal pain and cloudy effluent. The peritoneal effluent cell count was 2400 cells/μL (90% neutrophils). An abdominal ultrasound showed a periumbilical abscess 2 cm in diameter, not communicating with the peritoneal cavity or the catheter tunnel. Empirical treatment with intraperitoneal gentamicin (50 mg once daily) and vancomycin (2 g/week) was prescribed and peritoneal effluent was sent for culture.

The peritoneal effluent was processed according to the usual techniques [5]. A Gram stain showed abundant polymorphonuclear leucocytes but no bacteria. After 48 h of incubation, there was scanty colony growth on aerobic media (Tryptic soy blood agar and chocolate agar) and in the aerobic bottle of liquid media. The colonies were yellow and wrinkled. The Kovacs oxidase test was negative and the organism was finally identified as *P. oryzihabitans*, using an API-20 NE strip (code no. 00476151). The strain was susceptible to third- and fourth-generation cephalosporins, carbapenems, aminoglycosides, piperacillin/tazobactam and ciprofloxacin, and was resistant to ampicillin, cefazolin and cefuroxime. Vancomycin treatment was suspended, and gentamicin and cefuroxime were continued for 2 and 3 weeks, respectively. The response was satisfactory.

Table 1 Characteristics of patients with *Pseudomonas oryzihabitans* peritonitis and peritoneal dialysis

Case	Ref.	Sex	Age	Underlying diseases	Therapy	Previous episodes of dialysis-related infection (organism)	Outcome
1	[10]	M	54	Diabetes, chronic glomerulonephritis. CAPD	Cefazolin + tobramycin, tobramycin	Yes (*Acinetobacter calcoaceticus* var. *anitratus*, *Escherichia coli*)	Cure
2	[7]	M	62	Obstructive uropathy. CAPD	Cefuroxime + gentamicin, gentamicin	Yes (Coagulase-negative *Staphylococcus*)	Cure
3	[8]	M	47	Goodpasture's syndrome. CAPD	Cephapirin + gentamicin, ampicillin	Yes (Coagulase-negative *Staphylococcus*)	Cure
4	[2]	M	63	Diabetes. CAPD	Vancomycin + tobramycin, tobramycin	Yes (*Staphylococcus aureus*)	Cure
5	[9]	F	44	Heart/lung transplant. CCPD[a]	Vancomycin + tobramycin, tobramycin	Yes (*Staphylococcus aureus*, Coagulase-negative *Staphylococcus*)	Cure
6	This case	F	50	Mesangial IgA nephropathy. CAPD	Gentamicin + vancomycin, gentamicin + cefuroxime	Yes (*Pseudomonas aeruginosa*, *Escherichia coli*)	Cure

[a]CCPD, continuous cycling peritoneal dialysis.

Pseudomonas oryzihabitans has recently been reclassified in the genus *Pseudomonas* [6]. It is an inhabitant of soil and moist environments, which has been suggested as a source of human infection [3,4]. We reviewed the medline database and found only five previous reports of CAPD-related peritonitis [2,7–9], although another two cases have also been described [1,3]. However, in these two cases, the isolate was not in pure culture, so its pathogenic role in the disease is not certain. Peritoneal dialysis-related cases are summarized in Table 1 [2,7–9]. As in the case described here, all other patients had a history of infections related to the dialysis procedure, although the organisms implicated in these earlier episodes were different. Therapy differed, but aminoglycosides were included as empirical therapy in all cases. No catheters were removed, and all the patients were cured with antimicrobial therapy alone.

In conclusion, the isolation of this environmental organism in clinical samples must be interpreted according to clinical data, as they can be the cause of disease in immunocompromised hosts or in those with indwelling devices such as peritoneal catheters. Given the low virulence of the organism, antibiotics alone should be able to clear the infection: however, removal of indwelling catheter(s) may be required.

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